

# Zenyatta Announces a Simplified Graphite Purification Process and Significant Increase in Overall Recoveries for the Albany Graphite Project

16.07.2018 | [GlobeNewswire](#)

THUNDER BAY, July 16, 2018 - [Zenyatta Ventures Ltd.](#) ("Zenyatta" or the "Company") (TSXV:ZEN) is pleased to announce the results from test-work performed in 2017 which resulted in a much simplified purification process and a significant improvement in the total recovery of high-purity graphite from the Albany Graphite Deposit located near the communities of Constance Lake First Nation and Hearst, Ontario, Canada. Recoveries improved from 75.4% achieved in the 2014-2015 testwork for the Preliminary Economic Assessment (PEA) to approximately 90%. This new process has lower energy and reagent consumption and also permits more efficient recycling of the leach solutions when compared to the original process developed for the PEA.

The Company will be re-starting its metallurgical test-work program for the Albany Graphite Deposit this month to collect engineering data for the next technical report. It is anticipated that this test-work will take approximately 4 months to complete. Laboratory investigations into the purification of graphite concentrate were suspended in August 2017 due to lack of funds. This work will be conducted at SGS Canada Inc. (SGS), Lakefield, Ontario under the supervision of the Zenyatta's Metallurgist and Project Manager, James Jordan, P.Eng.

In April 2017, Zenyatta reported that it had successfully completed the flotation pilot testing portion of metallurgical test-work and the results indicated that at a target grade of 85% graphitic carbon (Cg), flotation recovery was projected to be approximately 90%. This program also provided ample material for the subsequent purification test-work. Mr. Jordan commented, "We are very pleased with the purification test-work results to date and I am confident that we will be able to consistently produce a graphite product with a minimum 99.8% purity using a much simplified and commercially viable process with significantly higher recoveries. The project will benefit environmentally from this new process due to significantly lower energy use and reduced waste generation."

The goal of the latest round of purification test-work was to develop a flowsheet which is more cost effective than the PEA caustic (NaOH) bake/leach process and deliver graphite product which is suitable for the emerging graphene and nanographite market. A further goal was to perform testing for the first time using a concentrate that is more representative of the entire Albany Graphite deposit.

The first phase program investigated a process based on high-pressure caustic leaching of graphite concentrate followed by acid leaching (Zenyatta Pressure Leach or ZPL). At this stage, our objective was to determine the efficacy of the process in removing the bulk of impurities and not to produce any specific purity of product. It was concluded that a purity of 97.5% Cg, representing 85% impurity removal, could be consistently achieved. This process has many similarities to the Bayer Process which is used commercially to produce alumina. Process conditions chosen for the tests were kept within industry proven limits of temperature and caustic concentration.

The results are very encouraging with fast reaction time, relatively low caustic concentration and modest autoclave temperature/pressure. Acid leaching of autoclaved material is required to solubilize reaction products of the high-pressure caustic leach and hydrochloric and sulphuric acid were equally effective. Reaction time was again quite fast with low reagent concentration. It was also noted that the filtration characteristics were superior to that encountered in the bake/leach process.

Another primary objective in developing this process was to allow economical recycling of process solutions and the recovery of unreacted caustic soda. A series of tests determined that reacting autoclave leach solution with lime (CaO) was effective in removing impurities while regenerating caustic soda, indicating the

ability to reuse the leach solution within the process. Additionally, removal of impurities from the acidic leach solution was performed by reacting with limestone ( $\text{CaCO}_3$ ) and lime, indicating the ability to recycle this solution as well. Locked cycle tests of a fully integrated circuit will be required to demonstrate that recycling is not detrimental and these tests will be part of the next stage of work to be performed at SGS.

The second phase of the work investigated three alternatives for upgrading ZPL product to a target purity of 99.9%. These alternatives were a) second stage ZPL b) caustic bake/leach and c) acidic fluoride leach (ZHL). The second stage ZPL was tested at more aggressive conditions than used in the first stage and yielded best graphite purity of 99.3% Cg. The caustic bake leach test using conditions developed previously yielded a graphite purity of 99.9%. ZHL purification using a solution containing a mixture of  $\text{NH}_4\text{F}$  and  $\text{HCl}$  yielded a minimum graphite purity of 99.8% Cg. Chemical analysis of the resulting impurities varied for each of the processes with elevated aluminum in graphite purified using ZHL being the most significant difference.

A preliminary assessment of results, including several diagnostic leach tests, indicates that achieving a purity of 99.9% Cg may be impractical and that ZHL is the most promising of the three alternatives. The process operates at 50 degrees C, will require relatively simple equipment and also has a low reagent and energy consumption. While the caustic bake/leach process yields a marginally better purity, its use as a second stage purification would suffer from the same deficiencies identified in previous work including a loss of approximately 11% of the feed graphite, difficulty in recycling leach solutions along with high energy and reagent consumption.

James Jordan, P.Eng., is the "Qualified Person" for the purposes of National Instrument 43-101 and has reviewed, prepared and supervised the preparation of the technical information contained in this news release. SGS performed analyses of all purified Albany graphite samples by direct ash analysis using a platinum crucible, according to a validated method that also accurately quantifies key trace level impurities by subsequent ICP analysis.

Zenyatta's Albany Graphite Project hosts a large and unique quality deposit of highly crystalline graphite. Independent labs in Japan, UK, Israel, USA and Canada have demonstrated that Zenyatta's Albany Graphite™ easily converts (exfoliates) to graphene using a variety of simple mechanical and chemical methods. The deposit is located in northern Ontario just 30km north of the Trans-Canada Highway, near the communities of Constance Lake First Nation and Hearst. Important nearby infrastructure includes hydro-power, natural gas pipeline, a rail line 50 km away and an all-weather road just 10 km from the deposit.

For Further Information Please visit the Company's website at: <http://www.zenyatta.ca> or contact:  
Dr. Francis Dubé, Director & Head of Business Development and Technology  
Tel: +1 (289) 821-2820  
Email: [fdube@zenyatta.ca](mailto:fdube@zenyatta.ca)

**CAUTIONARY STATEMENT:** This analysis does not represent a statistically large sample size. Furthermore, these positive results do not mean that Zenyatta can extract and process Albany graphite for graphite applications on an economic basis. Without a formal independent feasibility study, there is no assurance that the operation will be economic. The Company has completed a July 9, 2015 Preliminary Economic Assessment which indicates an open pit mine life of 22 years (excludes underground resource which is open at depth) producing 30,000 tonnes purified graphite per annum (see Zenyatta press release of 1 June 2015). The PEA is preliminary in nature, it includes inferred mineral resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that the preliminary economic assessment will be realized. Neither TSX Venture Exchange nor its Regulation Services Provider (as that term is defined in the policies of the TSX Venture Exchange) accepts responsibility for the adequacy or accuracy of this release. This news release may contain forward looking information and Zenyatta cautions readers that forward looking information is based on certain assumptions and risk factors that could cause actual results to differ materially from the expectations of Zenyatta included in this news release. This news release includes certain "forward-looking statements", which often, but not always, can be identified by the use of words such as "potential", "believes", "anticipates", "expects", "estimates", "may", "could", "would", "will", or "plan". These statements are based on information currently available to Zenyatta and Zenyatta provides no assurance that actual results will meet management's expectations. Forward-looking statements include estimates and statements with respect to Zenyatta's future plans, objectives or goals, to the effect that Zenyatta or management expects a stated condition or result to occur, including the expected timing for release of a pre-feasibility study, the expected uses for graphite in the future, and the future uses of the

graphite from Zenyatta's Albany deposit. Since forward-looking statements are based on assumptions and address future events and conditions, by their very nature they involve inherent risks and uncertainties. Actual results relating to, among other things, results of metallurgical processing, ongoing exploration, project development, reclamation and capital costs of Zenyatta's mineral properties, and Zenyatta's financial condition and prospects, could differ materially from those currently anticipated in such statements for many reasons such as, but are not limited to: failure to convert estimated mineral resources to reserves; the preliminary nature of metallurgical test results; the inability to identify target markets and satisfy the product criteria for such markets; the inability to complete a pre-feasibility study; the inability to enter into offtake agreements with qualified purchasers; delays in obtaining or failures to obtain required governmental, environmental or other project approvals; political risks; uncertainties relating to the availability and costs of financing needed in the future; changes in equity markets, inflation, changes in exchange rates; fluctuations in commodity prices; delays in the development of projects; capital and operating costs varying significantly from estimates and the other risks involved in the mineral exploration and development industry; and those risks set out in Zenyatta's public documents filed on SEDAR. This list is not exhaustive of the factors that may affect any of Zenyatta's forward-looking statements. These and other factors should be considered carefully and readers should not place undue reliance on Zenyatta's forward-looking statements. Although Zenyatta believes that the assumptions and factors used in preparing the forward-looking information in this news release are reasonable, undue reliance should not be placed on such information, which only applies as of the date of this news release, and no assurance can be given that such events will occur in the disclosed time frames or at all. Zenyatta disclaims any intention or obligation to update or revise any forward-looking information, whether as a result of new information, future events or otherwise, other than as required by law.

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Die URL für diesen Artikel lautet:

<https://www.rohstoff-welt.de/news/303925--Zenyatta-Announces-a-Simplified-Graphite-Purification-Process-and-Significant-Increase-in-Overall-Recoveries-for>

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